

NEICO Coal Leases  
Genwal Coal Company

Seep and Spring Inventory  
November 17, 1989

APPENDIX A

# CHEMTECH

CHEMICAL AND BACTERIOLOGICAL ANALYSES

Total dissolved  
not filtered

## CERTIFICATE OF ANALYSIS

### SAMPLE IDENTIFICATION

CLIENT: Earthfax Engineering  
7324 South 1300 East #100  
Midvale, UT 84047

LAB NO: U045417

DATE SAMPLED: 10-13-89

TIME SAMPLED:

SAMPLED BY: R.B.G.

LOCATION: Genwal SP 58

### COMMENTS:

### PARAMETER

### DETECTED

Alkalinity as CaCO<sub>3</sub>, mg/l..... 240  
Ammonia as NH<sub>3</sub>-N, mg/l..... 0.36  
Arsenic as As, mg/l..... 0.032  
Barium as Ba, mg/l..... <.01  
Bicarbonate as HCO<sub>3</sub>, mg/l..... 288  
Boron as B, mg/l..... 0.118  
Cadmium as Cd, mg/l..... <.01  
Calcium as Ca, mg/l..... 75.9  
Carbonate as CO<sub>3</sub>, mg/l..... 2.7  
Chloride as Cl, mg/l..... 13.8  
Chromium as Cr (Hex), mg/l..... <.01  
Chromium as Cr (Tot), mg/l..... <.01  
Acidity as CaCO<sub>3</sub>, mg/l..... <10  
Aluminum as Al, mg/l..... <.1  
Molybdenum as Mo, mg/l..... <.01  
Sulfide as H<sub>2</sub>S, mg/l..... <.1

### PARAMETER

### DETECTED

Conductivity, umhos/cm..... 537  
Copper as Cu, mg/l..... <.01  
Fluoride as F, mg/l..... <.1  
Hardness as CaCO<sub>3</sub>, mg/l..... 293  
Hydroxide as OH, mg/l..... 0  
Iron as Fe (Diss), mg/l..... <.01  
Iron as Fe (Tot), mg/l..... 0.025  
Lead as Pb, mg/l..... <.01  
Magnesium as Mg, mg/l..... 40.2  
Manganese as Mn, mg/l..... <.01  
Mercury as Hg, mg/l..... <.0002  
Nickel as Ni, mg/l..... <.01  
Nitrate as NO<sub>3</sub>-N, mg/l..... 0.292  
Nitrite as NO<sub>2</sub>-N, mg/l..... 0.019  
Ortho Phosphate as PO<sub>4</sub>-P, mg/l <.01  
Potassium as K, mg/l..... 0.9  
Selenium as Se, mg/l..... <.002  
Silver as Ag, mg/l..... <.01  
Sodium as Na, mg/l..... 3.7  
Sulfate as SO<sub>4</sub>, mg/l..... 59.2  
Total Dissolved Solids, mg/l.. 303  
Turbidity, NTU..... 0.67  
Zinc as Zn, mg/l..... <.01  
pH Units..... 8.17  
TSS, mg/l..... <1  
Cation, meq/l..... 6.24  
Anion, meq/l..... 6.34



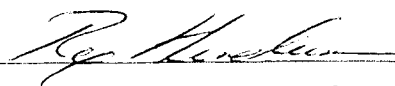
Rex Henderson

# CHEMTECH

CHEMICAL AND BACTERIOLOGICAL ANALYSES

## CERTIFICATE OF ANALYSIS

SAMPLE IDENTIFICATION	PARAMETER	DETECTED
CLIENT: Earthfax Engineering	Conductivity, umhos/cm.....	306
7324 South 1300 East #100	Copper as Cu, mg/l.....	<.01
Midvale, UT 84047	Fluoride as F, mg/l.....	<.1
LAB NO: U045416	Hardness as CaCO <sub>3</sub> , mg/l.....	151
DATE SAMPLED: 10-13-89	Hydroxide as OH, mg/l.....	0
TIME SAMPLED:	Iron as Fe (Diss), mg/l.....	<.01
SAMPLED BY: R.B.G.	Iron as Fe (Tot), mg/l.....	0.070
LOCATION: Genwal SP 1-3	Lead as Pb, mg/l.....	<.01
	Magnesium as Mg, mg/l.....	10.6
COMMENTS:	Manganese as Mn, mg/l.....	<.01
.....	Mercury as Hg, mg/l.....	<.0002
PARAMETER	Nickel as Ni, mg/l.....	<.01
DETECTED	Nitrate as NO <sub>3</sub> -N, mg/l.....	0.412
Alkalinity as CaCO <sub>3</sub> , mg/l.....	Nitrite as NO <sub>2</sub> -N, mg/l.....	0.019
156	Ortho Phosphate as PO <sub>4</sub> -P, mg/l.....	<.01
Ammonia as NH <sub>3</sub> -N, mg/l.....	Potassium as K, mg/l.....	0.2
0.68	Selenium as Se, mg/l.....	<.002
Arsenic as As, mg/l.....	Silver as Ag, mg/l.....	<.01
<.01	Sodium as Na, mg/l.....	3.7
Barium as Ba, mg/l.....	Sulfate as SO <sub>4</sub> , mg/l.....	9.2
0.020	Total Dissolved Solids, mg/l.....	163
Bicarbonate as HCO <sub>3</sub> , mg/l.....	Turbidity, NTU.....	1.6
190	Zinc as Zn, mg/l.....	0.025
Boron as B, mg/l.....	pH Units.....	7.49
0.112	TSS, mg/l.....	<1
Cadmium as Cd, mg/l.....	Cation, meq/l.....	3.70
<.01	Anion, meq/l.....	3.66
Calcium as Ca, mg/l.....		
52.4		
Carbonate as CO <sub>3</sub> , mg/l.....		
0		
Chloride as Cl, mg/l.....		
12.4		
Chromium as Cr (Hex), mg/l.....		
<.01		
Chromium as Cr (Tot), mg/l.....		
<.01		
Acidity as CaCO <sub>3</sub> , mg/l.....		
<10		
Aluminum as Al, mg/l.....		
<.1		
Molybdenum as Mo, mg/l.....		
<.01		
Sulfide as H <sub>2</sub> S, mg/l.....		
<.1		

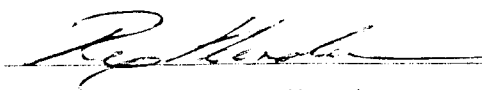
  
Rex Henderson

# CHEMTECH

CHEMICAL AND BACTERIOLOGICAL ANALYSES

## CERTIFICATE OF ANALYSIS

SAMPLE IDENTIFICATION	PARAMETER	DETECTED
CLIENT: Earthfax Engineering	Conductivity, umhos/cm.....	375
7324 South 1300 East, Suite 100	Copper as Cu, mg/l.....	0.032
Midvale, UT 84047	Fluoride as F, mg/l.....	<.1
LAB NO: U045972	Hardness as CaCO <sub>3</sub> , mg/l.....	246
DATE SAMPLED: 11-2-89	Hydroxide as OH, mg/l.....	0
TIME SAMPLED:	Iron as Fe (Diss), mg/l.....	<.01
SAMPLED BY:	Iron as Fe (Tot), mg/l.....	<.01
LOCATION: SP1-25	Lead as Pb, mg/l.....	<.01
	Magnesium as Mg, mg/l.....	16.9
COMMENTS:	Manganese as Mn, mg/l.....	<.01
.....	Mercury as Hg, mg/l.....	<.0002
PARAMETER	Nickel as Ni, mg/l.....	<.01
DETECTED	Nitrate as NO <sub>3</sub> -N, mg/l.....	0.67
Alkalinity as CaCO <sub>3</sub> , mg/l.....	Nitrite as NO <sub>2</sub> -N, mg/l.....	<.005
210	Phosphate as PO <sub>4</sub> -P, mg/l.....	<.01
Ammonia as NH <sub>3</sub> -N, mg/l.....	Potassium as K, mg/l.....	0.3
0.81	Selenium as Se, mg/l.....	<.002
Arsenic as As, mg/l.....	Silica as SiO <sub>2</sub> (Diss), mg/l...	12.4
<.01	Silver as Ag, mg/l.....	<.01
Barium as Ba, mg/l.....	Sodium as Na, mg/l.....	6.8
<.01	Sulfate as SO <sub>4</sub> , mg/l.....	9.8
Bicarbonate as HCO <sub>3</sub> , mg/l.....	Total Dissolved Solids, mg/l..	247
256	Turbidity, NTU.....	0.9
Boron as B, mg/l.....	Zinc as Zn, mg/l.....	<.01
0.24	pH Units.....	7.90
Cadmium as Cd, mg/l.....	Cation, meq/l.....	4.48
<.01	Anion, meq/l.....	4.69
Calcium as Ca, mg/l.....		
54.7		
Carbonate as CO <sub>3</sub> , mg/l.....		
0		
Chloride as Cl, mg/l.....		
10.1		
Chromium as Cr (Hex), mg/l.....		
<.01		
Chromium as Cr (Tot), mg/l.....		
<.01		
Aluminum as Al, mg/l.....		
<.1		
Molybdenum as Mo, mg/l.....		
<.01		
Sulfide as H <sub>2</sub> S, mg/l.....		
<.1		
TSS, mg/l.....		
3.0		



Rex Henderson

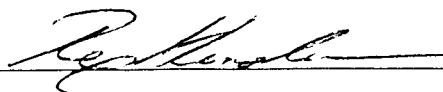
# CHEMTECH

CHEMICAL AND BACTERIOLOGICAL ANALYSES

1000 S. STRAYLER  
MIDVALE, UTAH 84047  
(801) 242-7200

## CERTIFICATE OF ANALYSIS

SAMPLE IDENTIFICATION	PARAMETER	DETECTED
CLIENT: Earthfax Engineering	Conductivity, umhos/cm.....	310
7324 South 1300 East, Suite 100	Copper as Cu, mg/l.....	0.032
Midvale, UT 84047	Fluoride as F, mg/l.....	<.1
LAB NO: U045974	Hardness as CaCO <sub>3</sub> , mg/l.....	208
DATE SAMPLED: 11-2-89	Hydroxide as OH, mg/l.....	0
TIME SAMPLED:	Iron as Fe (Diss), mg/l.....	<.01
SAMPLED BY:	Iron as Fe (Tot), mg/l.....	0.020
LOCATION: SP2-9	Lead as Pb, mg/l.....	<.01
	Magnesium as Mg, mg/l.....	16.6
COMMENTS:	Manganese as Mn, mg/l.....	<.01
.....	Mercury as Hg, mg/l.....	<.0002
PARAMETER	Nickel as Ni, mg/l.....	<.01
DETECTED	Nitrate as NO <sub>3</sub> -N, mg/l.....	1.86
Alkalinity as CaCO <sub>3</sub> , mg/l.....	Nitrite as NO <sub>2</sub> -N, mg/l.....	<.005
167	Phosphate as PO <sub>4</sub> -P, mg/l.....	<.01
Ammonia as NH <sub>3</sub> -N, mg/l.....	Potassium as K, mg/l.....	0.6
0.36	Selenium as Se, mg/l.....	<.002
Arsenic as As, mg/l.....	Silica as SiO <sub>2</sub> (Diss), mg/l...	13.8
<.01	Silver as Ag, mg/l.....	<.01
Barium as Ba, mg/l.....	Sodium as Na, mg/l.....	7.3
<.01	Sulfate as SO <sub>4</sub> , mg/l.....	7.4
Bicarbonate as HCO <sub>3</sub> , mg/l.....	Total Dissolved Solids, mg/l..	200
204	Turbidity, NTU.....	1.2
Boron as B, mg/l.....	Zinc as Zn, mg/l.....	0.022
0.23	pH Units.....	7.69
Cadmium as Cd, mg/l.....	Cation, meq/l.....	3.87
<.01	Anion, meq/l.....	3.84
Calcium as Ca, mg/l.....		
43.1		
Carbonate as CO <sub>3</sub> , mg/l.....		
0		
Chloride as Cl, mg/l.....		
11.1		
Chromium as Cr (Hex), mg/l....		
<.01		
Chromium as Cr (Tot), mg/l....		
<.01		
Aluminum as Al, mg/l.....		
<.1		
Molybdenum as Mo, mg/l.....		
<.01		
Sulfide as H <sub>2</sub> S, mg/l.....		
<.1		
TSS, mg/l.....		
5.0		



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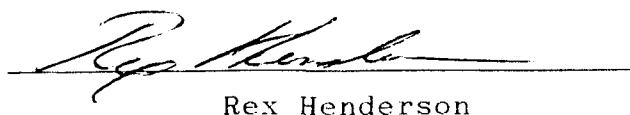
# CHEMTECH

CHEMICAL AND BACTERIOLOGICAL ANALYSES

100 S. RAILEY  
TAMPA, FL 33601  
(813) 281-7171

## CERTIFICATE OF ANALYSIS

SAMPLE IDENTIFICATION	PARAMETER	DETECTED
CLIENT: Earthfax Engineering	Conductivity, umhos/cm.....	459
7324 South 1300 East, Suite 100	Copper as Cu, mg/l.....	0.045
Midvale, UT 84047	Fluoride as F, mg/l.....	<.1
LAB NO: U045973	Hardness as CaCO <sub>3</sub> , mg/l.....	292
DATE SAMPLED: 11-2-89	Hydroxide as OH, mg/l.....	0
TIME SAMPLED:	Iron as Fe (Diss), mg/l.....	0.10
SAMPLED BY:	Iron as Fe (Tot), mg/l.....	0.59
LOCATION: SP2-33a	Lead as Pb, mg/l.....	<.01
	Magnesium as Mg, mg/l.....	37.4
COMMENTS:	Manganese as Mn, mg/l.....	<.01
.....	Mercury as Hg, mg/l.....	<.0002
PARAMETER	Nickel as Ni, mg/l.....	<.01
DETECTED	Nitrate as NO <sub>3</sub> -N, mg/l.....	0.71
Alkalinity as CaCO <sub>3</sub> , mg/l.....	Nitrite as NO <sub>2</sub> -N, mg/l.....	0.0051
292	Phosphate as PO <sub>4</sub> -P, mg/l.....	<.01
Ammonia as NH <sub>3</sub> -N, mg/l.....	Potassium as K, mg/l.....	0.6
0.50	Selenium as Se, mg/l.....	<.002
Arsenic as As, mg/l.....	Silica as SiO <sub>2</sub> (Diss), mg/l....	14.4
<.01	Silver as Ag, mg/l.....	<.01
Barium as Ba, mg/l.....	Sodium as Na, mg/l.....	8.2
<.01	Sulfate as SO <sub>4</sub> , mg/l.....	34.6
Bicarbonate as HCO <sub>3</sub> , mg/l.....	Total Dissolved Solids, mg/l..	276
356	Turbidity, NTU.....	28
Boron as B, mg/l.....	Zinc as Zn, mg/l.....	0.13
0.26	pH Units.....	8.05
Cadmium as Cd, mg/l.....	Cation, meq/l.....	6.84
<.01	Anion, meq/l.....	6.85
Calcium as Ca, mg/l.....		
67.1		
Carbonate as CO <sub>3</sub> , mg/l.....		
0		
Chloride as Cl, mg/l.....		
10.1		
Chromium as Cr (Hex), mg/l....		
<.01		
Chromium as Cr (Tot), mg/l....		
<.01		
Aluminum as Al, mg/l.....		
<.1		
Molybdenum as Mo, mg/l.....		
<.01		
Sulfide as H <sub>2</sub> S, mg/l.....		
<.1		
TSS, mg/l.....		
70		



Rex Henderson